

LISTING OF CLAIMS

1. (original) A pharmaceutical composition which comprises as an active ingredient a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans, and at least one essential oil in an amount effective to allow penetration of the dermis or mucous membranes of mammals by the complex carbohydrate.

2. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrate is a polysaccharide.

3. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrate is an oligosaccharide.

4. (original) The pharmaceutical composition according to claim 1, wherein said essential oil is natural or synthetic.

5. (original) The pharmaceutical composition according to claim 4, wherein said natural or synthetic essential oils are selected from the group consisting of Eucalyptus Oil, Rosemary Oil, Pine Needle Oil, Tea Tree Oil, Wintergreen Oil, Peppermint Oil, Spearmint Oil, Sweet Birch Oil, Camphor Oil, Sage Oil, Jojoba Oil, Cinnamon Oil, Anise Oil, Lemon Oil, Lime Oil, Orange Oil, Clove Oil Almond Oil, White Pine Oil Cardamon Oil, Cedar Leaf oil, Sweet Birch and EMU Oil.

6. (original) The pharmaceutical composition according to claim 2, wherein said polysaccharides are selected from the group consisting of a glycosaminoglycan and a mannan.

7. (original) The pharmaceutical composition according to claim 6, wherein said glycosaminoglycan is selected from the group consisting of hyaluronic acid, heparin, heparin sulfate, low molecular weight heparin, dermatan sulfate, chondroitin sulfate, polysulfated glycosaminoglycan, keratan sulfate, salts thereof and derivatives thereof.

8. (original) The pharmaceutical composition according to claim 2, wherein said polysaccharide is obtained from an extract of the Aloe Vera plant.

9. (original) The pharmaceutical composition according to claim 3, herein said oligosaccharide is a sialylated sugar.

10. (original) The pharmaceutical composition according to claim 4, wherein said essential oil is an aromatic oil.

11. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrates comprise a mixture of molecular weight ranges.

12. (original) The pharmaceutical composition according to claim 11, wherein said complex carbohydrates comprise a mixture of a high molecular weight complex carbohydrate and a low molecular weight complex carbohydrate.

13. (original) The pharmaceutical composition according to claim 11, wherein the high molecular weight and low molecular weight complex carbohydrate differ by molecular weight and chemical structure.

14. (original) The pharmaceutical composition according to claim 11, wherein said high molecular weight and low molecular weight complex carbohydrates range from two different size polymers of the same complex carbohydrates.

15. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrates are in a concentration ranging from 0.1% to 99% wt/vol and said essential oils are in a concentration from 0.0001% to 20% vol/vol.

16. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrates are in a concentration ranging from 0.5% to 3.0% wt/vol and said essential oils are in a concentration of between 0.5% and 3.0% vol/vol.

17. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrates are in a concentration ranging from 0.01% to 5.0% wt/vol and said essential oils are in a concentration ranging from 0.5% to 10% vol/vol in an Aloe Vera gel concentrate base with a concentration of between 50% and 99% vol/vol.

18. (original) The pharmaceutical composition according to claim 1, wherein said complex carbohydrates are in a concentration ranging from 0.01% to 5.0% wt/vol and said essential oils are in a concentration ranging from 95% to 99.99% vol/vol.

19. (currently amended) An orally or mucosally-administered pharmaceutical composition which comprises as an active ingredient 0.005 to 50 mg/kg body weight of at least one complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides, and glycosaminoglycans ~~optionally with 0.0001 to 20% by vol.~~ Essential oil with the proviso that said composition does not contain an essential oil as an active ingredient.

20. (original) A topical pharmaceutical composition which comprises as an active ingredient a pharmacologically effective amount of at least one complex carbohydrate selected from the group consisting of a mixture of high and low molecular weight ranges of low purity hyaluronic acid in a total concentration of between 0.5% and 3.0% wt/vol and at least one essential oil selected from the group consisting of Tea Tree Oil, Rosemary Oil, Peppermint Oil, Spearmint Oil, Sweet Birch Oil and Wintergreen Oil in a total concentration of between 0.5% and 3.0% vol/vol.

21. (original) An orally or mucosally-delivered pharmaceutical composition which comprises as an active ingredient a pharmacologically effective amount of at least one complex carbohydrate selected from the group consisting of a

mixture of high and low molecular weight ranges of low purity hyaluronic acid in a total concentration of between 0.5% and 3.0% wt/vol and at least one essential oil selected from the group consisting of Peppermint Oil, Spearmint Oil and Wintergreen Oil in a total concentration of between 0.0001% and 3.0% vol/vol.

22. (original) An orally or mucosally-delivered pharmaceutical composition which comprises as an active ingredient a pharmacologically effective amount of at least one complex carbohydrate selected from the group consisting of a mixture of high and low molecular weight ranges of low purity hyaluronic acid in a total concentration of between 0.5% and 3.0% wt/vol with the proviso that said composition does not contain an essential oil as an active ingredient.

23. (original) An orally or mucosally-delivered pharmaceutical composition which comprises as an active ingredient a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans optionally with the proviso that said composition does not contain an essential oil as an active ingredient.

24. (original) A method of treatment of inflammation, pain or itching which comprises topically, orally or mucosally applying to said mammal the composition of claim 1.

25. (original) The method of claim 24, wherein said topical application is made directly over or on the site of inflammation, pain and itching.

26. (original) The method of claim 24, wherein said oral or mucosal application form is selected from the group consisting of a liquid, an emulsion, a suspension, a cream, an ointment, a gel, a foam, a solid, a powder and a gum.

27. (original) The method of claim 24, wherein said inflammation, pain or itching results from arthritis, bursitis, athletic injuries, tendonitis, trauma, gastritis, colitis, esophagitis, bronchitis, sore throat, tonsillitis, tendonitis, fibromyalgia, TMJ, dental pain, bruising, poor circulation, muscle cramps, tired feet, allergies, poison ivy, insect bites/stings, asthma, anaphylaxis, surgery, childbirth, sunburn, burns, edema related to diabetes, decubitus ulcers, superficial cuts and scrapes, open wounds, dry skin, psoriasis, Attention Deficit Hyperactivity Disorder (ADHD), plaque formation associated with heart disease and stroke, increased degradation

of spinal nerves post spinal cord injury, adhesion formation post surgery, scar formation post surgery, wound healing, ganglion formation, Alzheimer's disease, HIV, cancer, wrinkles, and hair loss.

28. (original) The pharmaceutical composition of claim 1, wherein said complex carbohydrates are in a concentration ranging from 0.1% to 99% wt/vol and said essential oils are in a concentration from 0.5% to 20% vol/vol.

29. (original) The pharmaceutical composition of claim 20, wherein said complex carbohydrates are in a concentration ranging from 0.01% to 5.0% wt/vol and said essential oils are in a concentration ranging from 0.5% to 10% vol/vol in an Aloe Vera gel concentrate base with a concentration of between 50% and 99% vol/vol.

30. (original) A method of inhibiting the Adhesion cascade by administering a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans, which blocks the binding of leukocytes to the epithelium during tethering in inhibits migration and extravasation of leukocytes



to a site of trauma.

31. (original) A method for inhibiting tumor formation and tumor metastasis which comprises administering a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans which blocks the Metastatic cascade so as to inhibit binding of tumor cells to the epithelium of blood vessel walls.

32. (original) A method for preventing or treating inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions which comprises orally or mucosally administering to a mammal the composition of claim 1.

33. (original) A method for preventing or treating inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions which comprises orally administering to a mammal the composition of claim 19.

34. (original) A method for preventing or treating inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions which comprises mucosally

administering to a mammal the composition of claim 19.

35. (original) The method of Claims 33 or 34 wherein the inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions are selected from the group consisting of arthritis, bursitis, athletic injuries, tendonitis, trauma, anaphylaxis, surgery, childbirth, gastritis, colitis, esophagitis, bronchitis, sore throat, tonsillitis, tendonitis, fibromyalgia, TMJ, dental pain, bruising, poor circulation, muscle cramps, tired feet, allergies, poison ivy, insect bites/stings, asthma, sunburn, burns, edema related to diabetes, decubitus ulcers, superficial cuts and scrapes, open wounds, dry skin, psoriasis, Attention Deficit Hyperactivity Disorder (ADHD), plaque formation associated with heart disease and stroke, increased degradation of spinal nerves post spinal cord injury, adhesion formation post surgery, scar formation post surgery, wound healing, ganglion formation, Alzheimer's disease, HIV, cancer, wrinkles, and hair loss.

36. (original) The pharmaceutical composition according to claim 1 or 19, wherein said at least one complex carbohydrate has a molecular weight in the range of from 1,000 to less than 50,000 daltons.

37. (original) The pharmaceutical composition according to claim 1 or 19, wherein said at least one complex carbohydrate has a molecular weight in the range of from 100,000 to 300,000 daltons.

38. (original) The pharmaceutical composition according to claim 1 or 19, wherein said at least one complex carbohydrate has a molecular weight in the range of greater than 1,000,000 daltons.

39. (original) The pharmaceutical composition according to claim 1, wherein the essential oil is present in a concentration of between 0.5% to 3% vol/vol.

40. (original) A topical pharmaceutical composition comprising as an active ingredient a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans, and at least one essential oil in an amount effective to allow penetration of the dermis of mammals by the complex carbohydrate.

41. (original) The pharmaceutical composition according

to claim 1, wherein the form is selected from the group consisting of a liquid, an emulsion, a suspension, a solution, a cream, a gel, a foam, a solid, a powder, a spray, a gum and an ointment.

42. (original) The pharmaceutical composition according to claim 19, wherein the form is selected from the group consisting of a liquid, a gel, a solution, a suspension, an emulsion, an ointment, a cream, a solid, a powder, a gum and a spray.

43. (original) A composition for topically treating inflammation, pain or Allergy-related diseases and conditions, comprising a pharmaceutically effective amount of a low purity glycosaminoglycan or mannan in combination with an essential oil present in an amount effective to allow penetration of the dermis or mucous membranes of mammals by the glycosaminoglycan or mannan.

44. (original) A method of treating pain and inflammation comprising topically, orally or mucosally applying a pharmaceutical composition comprising a low purity glycosaminoglycan or mannan combined with an essential oil present in an amount effective to allow penetration of the

dermis or mucous membranes of mammals by the glycosaminoglycan or mannan.

45. (original) The method according to claim 44, wherein the glycosaminoglycan is selected from the group consisting of chondroitin sulfate, keratin sulfate, hyaluronic acid, dermatan sulfate and heparin sulfate and the essential oil is selected from the group consisting of Wintergreen Oil, Tea Tree Oil, Rosemary Oil, Clove Oil, Eucalyptus Oil, Camphor Oil, Peppermint Oil, Spearmint Oil, Sweet Birch Oil and Cinnamon Oil.

46. (original) The topical pharmaceutical composition of claim 1, wherein said composition is a pain-relieving composition.

47. (original) The oral pharmaceutical composition of claim 19, wherein said composition is a pain-relieving composition.

48. (original) The mucosally-delivered pharmaceutical composition of claim 21, wherein said composition is a pain-relieving composition.

49. (original) The oral pharmaceutical composition of

claim 19, wherein said composition is a tumor preventative or treatment composition.

50. (original) The composition of claim 1, wherein the low purity complex carbohydrate contains up to 5% by weight contaminants.

51. (original) The composition of claim 1, wherein the low purity complex carbohydrate contains less than 98% by weight hyaluronic acid.

52. (original) A method of treatment of inflammation, pain or allergy-related diseases and conditions which comprises topically applying to the skin of a mammal the composition of claim 1.

53. (original) The pharmaceutical composition of claim 1, wherein the active ingredient is present in an amount of at least 0.01% wt/vol.

54. (original) The pharmaceutical composition of claim 1, wherein the active ingredient is present in an amount of at least 1% wt/vol.

55. (original) The pharmaceutical composition of claim 1, wherein the essential oil is present in a concentration of between 0.0001% to 20% vol/vol.

56. (original) The pharmaceutical composition of claim 20, wherein the essential oil is present in a concentration of between 0.5% and 20% vol/vol.

57. (original) The pharmaceutical composition of claim 1, wherein the essential oil is present in a concentration of between 0.5% and 10% vol/vol.

58. (original) The pharmaceutical composition of claim 1, wherein the essential oil is present in a concentration of between 1% and 3% vol/vol.

59. (original) The pharmaceutical composition of claim 1, wherein said at least one low or cosmetic or food grade complex carbohydrate has a molecular weight in the range of from 1,000 to less than 50,000, from 100,000 to 500,000, or greater than 1,000,000.

60. (original) The pharmaceutical composition of claim 19, wherein the polysaccharides are selected from the group consisting of mannans and branched polysaccharides.

61. (original) A method of treating pruritus, comprising applying the composition of claim 1 wherein the essential oil is one which produces a cooling sensation on the skin.

62. (original) A method of preventing and treating diseases and conditions of mammals associated with the adhesion, metastatic or coronary cascades or are related to allergies, comprising applying a composition of complex carbohydrates and essential oils topically, orally or mucosally on a repeated basis.

63. (original) A method of preventing and treating diseases and conditions associated with the adhesion, metastatic or coronary cascades or are related to allergies, comprising orally or mucosally applying complex carbohydrates as the sole active ingredient.

64. (original) The methods of Claims 62 or 63 wherein the complex carbohydrates are administered as repeated low doses.



65. (original) The method of claim 64, wherein said repeated low doses are between 0.0001 mg and 100 mg of said sole active ingredient.

66. (original) The compositions according to claims 41 or 42, wherein the forms of the composition are delivered in drinks, drink mixes, foods, supplements, mouthwashes, toothpaste, gargle, throat spray, vaporizers, chewing gum, throat lozenges, treats, candy, capsules, tablets, dissolvable gum or suppositories.

67. (original) The method of claims 63 or 64 wherein the diseases and conditions are selected from the group consisting of arthritis, gastritis, colitis, esophagitis, bronchitis, sore throat, tonsillitis, tendonitis, fibromyalgia, sunburn, heat burns, temporomandibular joint (TMJ) condition, dental pain, gingivitis, post surgical pain, itching associated with allergies and hypersensitivity, poison ivy, asthma, anaphylaxis, post surgical pain, childbirth, Attention Deficit Hyperactivity Disorder (ADHD), plaque formation associated with heart disease and stroke, increased degradation of spinal nerves post spinal cord injury, adhesion formation post surgery, scar formation post surgery, wound healing, decubitus ulcers, ganglion formation, Alzheimer's disease, HIV, cancer, Diabetes, skin

problems such as acne, psoriasis, wrinkles, and hair loss.

68. (original) The pharmaceutical composition of claims 1 or 19, wherein the composition does not contain an essential oil.

69. (original) The composition according to claims 1 or 19, wherein the complex carbohydrate is a hyaluronic acid or salt or derivative thereof.

70. (new) An orally or mucosally-administered pharmaceutical composition which comprises as an active ingredient a pharmacologically effective amount of at least one complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides, and glycosaminoglycans with the proviso that said composition does not contain an essential oil as an active ingredient.